



Legislative
Research
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MINUTES

Regional Watershed Advisory Task Force

First Meeting
2013 Interim
Monday, April 22, 2013

Ramada Inn and Suites Conference Center
1525 W. Havens
Mitchell, South Dakota

The first meeting of the interim Regional Watershed Advisory Task Force was called to order by Representative Brian Gosch, Chair, at 9:00 a.m. (CDT), on Monday, April 22, 2013, at the Ramada Inn and Suites Conference Center, in Mitchell, South Dakota.

A quorum was determined with the following members present: Representative Brian Gosch, Chair, Senator Mike Vehle, Vice Chair; Senators Jason Frerichs, Tom Jones, and Russell Olson; Representatives Dennis Feickert, Spencer Hawley, and Leslie Heinemann; Ms. Kim Vanneman; and Messrs. Dennis Duncan, Mike Jaspers, Rick Sommers, Paul Symens, and George Vandel.

Staff members present included Tom Magedanz, Principal Research Analyst, and David Ortbahn, Principal Research Analyst.

All material distributed at the meeting is attached to the original minutes on file in the Legislative Research Council (LRC). The committee documents are available at the LRC website at <http://legis.state.sd.us> under "Interim Information – Committee Documents." For the purpose of continuity, these minutes are not necessarily in chronological order.

Minutes

SENATOR VEHLE MOVED, SECONDED BY SENATOR OLSON, TO APPROVE THE MINUTES OF SEPTEMBER 25, 2012. The motion prevailed unanimously on a voice vote.

Review of Task Force Activity and Purpose

Representative Brian Gosch, Chair, welcomed everyone to the meeting and reviewed for everyone the directive of the task force as provided by statute.

Mr. Tom Magedanz, LRC staff, briefly reviewed the 2012 activities of the task force. He also explained two pieces of legislation that were introduced in the 2013 Legislature, not on behalf of the task force, but that were related to task force activities. A bill to clarify and revise provisions relating to the formation and operation of watershed districts (SB153) passed the Legislature. A bill to provide for a uniform county drainage permit application form and to remove the maximum limit for drainage permits fees (SB179) did not pass. Mr. Magedanz also discussed possible task force schedules and activities for the 2013 interim. He distributed to the task force a copy of the statutes creating the task force (**Document 1**), a copy of task force's interim report to the Executive Board of the Legislative Research Council

(**Document 2**), a listing of counties with current or repealed drainage ordinances (**Document 3**), and a copy of a statement from Lake County (**Document 4**).

Climate Implications for Watershed Management and Drainage Issues

Dr. Dennis Todey, South Dakota State University (SDSU), State Climatologist, provided a Power Point presentation (**Document 5**) in which he explained to the task force the climate trends in South Dakota regarding precipitation, dew point, and temperature. He stated, while it has been an irregular trend with intermittent dry years, the overall precipitation in the state has been increasing since the 1930s. He also stated that spring and fall precipitation have been trending up, especially in the fall. Large increases in fall precipitation have resulted in more water-saturated soils going into the spring growing season. The intensity of precipitation has also been increasing over the years in the Upper Midwest, including South Dakota, with more precipitation coming in large rainfall events. The dew point levels in the state have also been increasing. High dew points mean more moisture in the atmosphere, resulting in reduced evaporation potential. He said there has also been a general warming of the state. Since 1976 the trend has been for warmer temperatures in the months of December to February and slightly cooler temperatures for the months of June to August. Cooler high temperatures in the summer reduce evaporation as well as crop water use resulting in less water being removed from the soil surface. This has a big impact on areas like Bitter Lake where evaporation is the only way to remove water. In summary, he stated the climate trends in the state have been more precipitation overall, especially in the fall; more heavy precipitation events; increasing dew points; general warming, more during winter – less during summer; and decreased evaporation.

Dr. Todey told the task force that the climate trend has been for increasing flood magnitude in the Upper Midwest including the eastern part of South Dakota and reduced flooding to the west because of warmer winters and less snowpack. He said for the future there is a need to continue to monitor all parts of the water cycle including soil moisture, precipitation, relative humidity, and dew point.

Ag Drainage Practices and Issues

Dr. Chris Hay, SDSU, Agricultural and Biosystems Engineering, provided a Power Point presentation regarding agricultural drainage practices and issues (**Document 6**). He began by explaining that water is a major environmental factor limiting plant growth. In his presentation he addressed why South Dakota farmers are tiling, how tiling impacts hydrology and streamflow, and how tiling impacts water quality.

He explained that increasing commodity prices and land prices and improved drainage technology has provided an incentive to eliminate areas of poor drainage to improve agricultural production. Improved drainage benefits agricultural production by allowing for timelier field operations, reducing crop stress due to excess water and high water tables, reducing soil compaction, reducing the buildup of salts in the soil, and enhancing the ability to use other conservation practices. He told the task force that improved drainage in the Midwest results in typical yield increases of 10 to 30 bushels per acre for corn, 5 to 10 bushels per acre for soybeans, up to 17 bushels per acre for winter wheat, and up to 11 bushels per acre for

spring wheat. Factors that may necessitate drainage for agricultural production include slow permeability soils, restrictive soils or geologic layers, flat or depressional topography, compacted soil layers, soil salinity, and too much rain at the wrong time. He explained that soils are a mixture of minerals, air, water, and organic matter with the ideal soil composition being 47% minerals, 25% air, 25% water, and 3% organic matter to produce maximum plant production. Air and water are stored in the pore spaces of the soil. Yield is related to water availability; too little water and too much water decreases the relative yield of the plants. Through drainage a high water table can be lowered with the goal to create a deep-rooted, healthy crop.

Dr. Hay told the task force there was no simple answer regarding the impact of tile drainage on hydrology and streamflow. He briefly explained the various pathways that precipitation can take to help explain its impact on streamflow. Impacts of drainage on hydrology depend on a number of factors which are continuously changing, including soils, precipitation intensity, landscape, land use, time and season, and the type and extent of drainage. He commented that with clay soils drainage generally reduces peak flow and that with sandy soils drainage tends to increase peak flows. However, he stated that precipitation intensity can be a more important factor than soil type. A gentle rainfall favors infiltration and in such a case a tile drainage system will influence water flow. A high intensity rainfall favors surface runoff and tile drainage will have little impact. Some field-scale hydrologic studies show surface runoff reduced up to 65% and peak runoff reduced up to 30% with tile drainage. He stated that large-scale effects of tile drainage are not well known, with most studies having been done at the field scale. The impacts of tile drainage on hydrology have not been conclusively determined, with several models suggesting increases in water yield while others show a decrease.

Regarding the water quality impacts of tile drainage, Dr. Hay said the results have been a mixed bag. With tile drainage, soil erosion, sediment loss, and phosphorous loss from the soil are reduced. However, with tile drainage, nitrogen (nitrates) in the water runoff often exceed drinking water standards. He explained drainage impacts on nitrate loss and commented that less than 1% of the nitrates that get to the Gulf of Mexico come from South Dakota. He explained conservation drainage and how it is used to maintain the benefits of conventional agricultural drainage while addressing water quality and flow issues. He explained how flows from tile drainage can be regulated and how woodchip bioreactors and other buffers can be used to reduce the amount of nitrates that get into a stream from a drainage system.

In summary Dr. Hay stated that there are no simple answers for drainage impacts on hydrology and streamflow, but an understanding of fundamentals and models can help serve as a guide. He finished by saying there are positive and negative water quality impacts of drainage, and work continues on methods to reduce the negative impacts.

In response to a question regarding the impact of tile drainage system on an aquifer, Dr. Hay said that such a system would have little impact on an aquifer since it would probably be above a restrictive soil layer.

The task force recessed for lunch.

The Offsite Impacts of Improved Soil Health

Mr. Jeff Zimprich and **Mr. Jeff Hamenway**, Natural Resources Conservation Service (NRCS), Huron, South Dakota, discussed soil health and its impacts on rainfall infiltration (**Document 7**) and showed a video of an outdoor rainfall simulator and the levels of rainfall infiltration cropland and rangeland under varying types of tillage and soil cover (**Document 8**).

Mr. Mike Jaspers asked whether they had used the simulator on row crop soil canopies. Mr. Hamenway said they had not, but other demonstrations show that any kind of additional soil canopy increases rainfall infiltration rates into the soil.

Senator Jason Frerichs asked about wetland mitigation policies and whether urban mitigation is part of the mitigation process. Mr. Zimprich stated that mitigation could possibly be used, but that water management, wildlife, wetlands, flood control values, and other factors must be included. He also noted that the mitigation bank concept can include both agricultural and urban land.

Senator Mike Vehle asked whether there are any soil types for which no-till methods are not preferable and whether there are disadvantages to no-till farming. Mr. Zimprich answered that no-till is preferable but that appropriate management methods must be used and that it takes time to develop proper conditions and soil structure.

Representative Dennis Feickert asked about the effect of fall cover crops on soil moisture and management. Mr. Zimprich answered that the root systems and debris would cause water to infiltrate into the soil rather than to run off.

Issues with Watershed Management and Drainage

Mr. Clark Moeckly, Upper Crow Creek Watershed District, Britton, discussed the history and activities of the Upper Crow Creek Watershed District in Marshall County. The district was formed in 1968 for flood control purposes in conjunction with the federal PL 566 program. However, no structures were built at that time because of federal requirements for suitable discharge outlets so that water would not accumulate in Putney Slough. In the 1990s, increased water and flooding caused the district to enter into a coordinated resource management (CRM) program with Marshall and Brown counties. The CRM process fostered a better relationship among the affected parties, and grant money from state, federal, and private sources provided for the construction of one hundred small dams to retain water. The district also has used tax revenues for small projects such as cleanout and dam construction. The watershed district is not a drainage board – the county regulates drainage, but the district does work with the county on drainage issues.

Representative Brian Gosch asked whether the district has experienced obstacles from the federal government. Mr. Moeckly said they had not except that it sometimes involves a lot of paperwork. The district can do maintenance activity on its own.

Mr. George Vandel asked whether the district receives technical assistance from the Department of Environment and Natural Resources (DENR). Mr. Moeckly stated that they do

receive some assistance from DENR, but DENR's activity don't always apply to the district's specific situation. The district also receives assistance from NRCS.

Senator Vehle asked how much land area is covered by the district's one hundred dams. Mr. Moeckly answered that the dams are built on small tributaries in their watershed and are located in an approximate twenty-mile area.

Mr. Paul Symens asked whether there is potential for additional dams, and Mr. Moeckly stated that they could use more dams.

In response to a question by **Representative Gosch** about the use of a moderator in the CRM program, Mr. Moeckly stated that the moderator helped to resolve conflict and keep the process under control.

Representative Gosch also asked about putting affected land in public ownership; Mr. Moeckly stated that land where water would be held is put in public ownership through easements, the conservation reserve program (CRP), and other federal programs and that this is done through willing landowners.

County Perspectives and Experiences with Drainage Issues

The task force heard presentations by four counties, Brown, Kingsbury, McCook, and Yankton, on their experience with drainage problems and issues.

Brown County

Mr. Gary Vetter, Aberdeen, Brown County Director of Planning and Zoning, provided a Power Point presentation entitled "Brown County, South Dakota: A Local Perspective on Drainage" (**Document 9**). His presentation discussed serious flooding issues in Brown County in recent years, resulting in drainage issues as well. He discussed social and economic impacts, including damage to infrastructure, property, crops, livestock, and land. The county received an overwhelming amount of requests relating to drainage problems and disputes, leading the county to eventually repeal its drainage ordinance. Issues include some of the following: litigation and liability of the county for drainage decisions; drainage from across state and county borders; lack of fines or charges strict enough to deter unauthorized drainage activity; urban and agricultural development that has blocked original drain ways, ditches and culverts; citizens draining onto neighbors who do not have the resources to take legal action; crisis mode prevents proper engineering analysis; numerous jurisdictions are involved; need engineering help, and possible penalty and fine structure. Brown County repealed its drainage ordinance in April 2012, but continues to work toward a Brown County Water Management Plan.

Senator Tom Jones asked what the task force can do to help the county's situation. Mr. Vetter said that the problem is complex, but counties and townships need engineering help, a fine and enforcement structure, clarification of the county's liability for county drainage decisions, and a way of dealing with blockages caused by development activity.

Representative Gosch asked whether the county had coordinated with the Upper Crow Creek Watershed District. Mr. Vetter there had not been much coordination in the past but there has been more in recent years.

Senator Vehle asked about county liability issues and also whether a mediation process would be helpful. Mr. Vetter replied that the counties are concerned about liability and consequently do not intervene. He said that mediation might be helpful.

Kingsbury County

Mr. Roger Lee, DeSmet, Kingsbury County Commissioner, provided a Power Point presentation on drainage issues in Kingsbury County (**Document 10**). Kingsbury County has experienced major problems in recent decades relating to the expansion of Lake Thompson to an area much larger than in previous years, which has resulted in inaccessible roads, flooded farmland, and disputes over drainage activity as owners attempt to deal with the increased inundated areas. Drainage activity has increased and some producers have opted out of the federal farm program so that NRCS no longer is able to regulate wetlands on their property. Kingsbury County adopted a drainage ordinance in 1986 under South Dakota's 1985 county drainage law. The county repealed its drainage ordinance in 2011 for several reasons. The current drainage law limits permit fees to \$100, and the county was unable to recover its costs related to drainage regulation. Another factor was concern about liability for county actions and decisions. Also, the county has faced a large volume of permit applications and requests for county action, and the county does not have the time or the resources to address these requests.

Mr. Vandel asked what the task force could do to improve the situation; Mr. Lee stated that the county needs help to recover its administrative costs related to drainage matters, and the county needs protection from potential liability for its drainage regulation decisions and actions.

McCook County

Mr. Bill Smith, McCook County commissioner, stated that McCook County passed a drainage ordinance in the 1990's, which was revised in 2004 and 2011. He said that the county's drainage permitting program minimizes adverse impacts to downstream landowners and fosters communication by allowing landowners who receive drainage to have a voice before the drainage project begins. Mr. Smith described the contents of the drainage ordinance and stated that the county has issued an average of 100 permits per year recently. They have some concerns about liability, but they try to consult with experts before acting. The consensus of landowners is that the drainage ordinance is necessary.

Mr. Vandel asked whether the ordinance covers all types of drainage and whether they had received any negative comments from counties downstream about receiving water. Mr. Smith answered that they deal with all types of drainage. He said the water drains to Turner County and there are sometimes issues, but he supports tiling because water discharges more gradually, and he feels that each county should have a drainage ordinance to provide guidance and order.

Senator Frerichs asked whether the county received any assistance in drafting its drainage ordinance, and Mr. Smith said that South Eastern Council of Governments in Sioux Falls (SECOG) assisted them.

Senator Jones asked whether the drainage director is a paid position and whether there is a job description for the position. Mr. Smith stated that the position is paid and is combined with the county highway superintendent position and noted that the highway superintendent is very familiar with the area.

Senator Vehle asked the distance downstream that landowner approval is required. Mr. Smith stated that one-half mile from the outlet is the usual requirement.

Yankton County

Mr. Garry Moore, Yankton County Commissioner, discussed Yankton County's approach to drainage regulation and dealing with drainage. He noted that it is better to deal with issues before they worsen and go to court. Yankton County adopted a new drainage ordinance in 2012 as the result of a drainage task force that met in 2011-2012 and produced many drafts before the final version was approved (Yankton County Drainage Ordinance, **Document 11**). The drainage regulation process allows the county to be aware of what is happening and to be organized in addressing issues. Applicants must prepare a drainage application, and drainage must reach a "blue line" river or stream on a FEMA map. Adjoining landowners one mile downstream and one-half mile upstream must be notified, and an easement is required in order to be able to cross neighboring property. The permit must be approved by the county drainage commission and by the county commission. A permit may not be issued if a neighboring county objects. Mr. Moore stressed the need for using available technology and noted that the ordinance and permit process forces all parties to work together before undertaking drainage activity.

Senator Frerichs stated that the ordinance is complex and asked whether any agricultural producers have complained about the process. Mr. Moore answered that there have not been complaints to the drainage commission or county commission.

Mr. Vandel asked what the task force could do to improve the process. Mr. Moore stated that some changes to state law might be helpful but feels that Yankton County's system works well.

Senator Vehle asked about easements across neighbors' lands and whether they specify amounts of water. Mr. Moore stated that the easement allows the installer to do maintenance and said that drainage into the blue line is documented and that the blue line is not allowed to be overburdened.

Representative Gosch asked whether the county coordinates with the Vermillion Basin Water Development District or Turner-Lincoln-Clay Water Project District. Mr. Moore stated that some counties do not have permit systems in place, but Yankton County does coordinate with Clay County. He said they have not had much contact with the water development district but they do contact other affected agencies.

Public Testimony

Mr. Jay Gilbertson, Manager, East Dakota Water Development, submitted written testimony to the task force (**Document 12**).

Mr. Erling Podoll, Aberdeen, submitted written testimony to the task force (**Document 13**).

Mr. Don VonEye, Moody County Farm Bureau, submitted written testimony to the task force (**Document 14**). He stated that Moody County's drainage ordinance works well although there may be some possible improvements. He said that the county's drainage process fosters communication and local control and causes neighbors to work together. They use the blue line method but do not always connect to a flowing stream. He suggested the task force could get some good ideas looking at Minnesota's drainage laws. **Representative Gosch** asked what the obstacles are to keeping ditches cleaned out. Mr. VonEye answered that funding is a problem.

Mr. David Estabrook, Davison and Sanborn counties, submitted written testimony to the task force (**Document 15**). He stated that drain tiling and no-till farming practices complement each other.

Mr. Scott Estabrook, Sanborn County, submitted written testimony to the task force (**Document 16**). He discussed the history of drainage activity in the area and legal concepts relating to drainage and drainage regulation.

Mr. Norval Matzner, Aurora County, submitted written testimony to the task force (**Document 17**). He stated that excess water problems have become more common in recent years because of people draining land without permission and breaking up native prairie. He suggested tax relief for flooded property and working with state and federal agencies to establish reasonable lake levels.

Mr. Dave Bowers, Moody County, discussed tiling and drainage laws. He said that Moody County's drainage law works well and requires neighbors to work together. He does not feel that tiling does much damage but believes that counties should continue to be involved with drainage regulation and that any proposed law should be based on science.

Ms. Karen Cameron-Howell, Volga, who is retired from NRCS and has a science background, stated that legislation must be based on science and should not rely on law from other areas that doesn't apply. She stated that much drainage has been done in South Dakota over the years and that it is important to maintain ditches and existing infrastructure. She also stressed the importance of technology such as LIDAR mapping and imaging systems.

Mr. Jim Wahle, South Dakota Farmers Union District 2, referred to a resolution by the Farmers Union in support of the work of the task force. He supports clarifying and cleaning up water district law, requiring counties to be involved in drainage regulation, and measures to encourage the maintenance of drainage records by the counties.

Mr. Bryce Guillen, Mitchell, is a farmer and drain tiling contractor. He supports drainage activity because it contributes to agricultural production as well as job and economic development. He said that tiling does not change the amount of water going downstream, but slows the rate. **Representative Feickert** asked whether drainage projects are approved by an engineer and whether engineer involvement would reduce conflict and make it easier to reach agreement on projects. Mr. Guillen stated that engineers are usually not involved and that the problem is that there are not enough engineers available. He does like the use of technology such as the LIDAR system and tacheometry.

Mr. Steve Owen, Henry, discussed the connection between soil health and drainage and stated that drainage and tiling are necessary in order to support no-till methods.

Mr. Mike Allison, Brown County, said that farmers suffer losses because of lack of improved drainage and that better drainage can help reduce damage to soils. He said there is a need to protect landowners' rights and the State should back up the people who are doing drainage projects. He said that rural landowners should have the same rights that the urban population has.

Mr. Doyle Karpen, Union County, stated that urban drainage is also a problem and that urban drainage causes a large amount of water runoff.

Committee Discussion

Representative Gosch stated that the task force would meet again in late June or July for a two-day meeting to include a formal meeting and a tour of affected areas. Agricultural groups and other interested groups would be given the opportunity to be on the agenda at this meeting.

Adjournment

REPRESENTATIVE HAWLEY MOVED, SECONDED BY MR. VANDEL, THAT THE MEETING BE ADJOURNED. Motion prevailed on a voice vote.

The chair adjourned the meeting at 5:00 pm.

